

РЕЗЮМЕТА

на научните трудове представени за участие в конкурс за заемане на академичната длъжност- **“Доцент”** в област на висшето образование

б. Аграрни науки и ветеринарна медицина, Професионално направление: 6.1 Растениевъдство, Научна специалност- “Почвознание”

на гл. ас. д-р Виолета Стелиянова Вълчева “Агрохимия и почвознание” при Аграрен Университет – Пловдив

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I. ТРУДОВЕ ПО ПРОФЕСИОНАЛНО НАПРАВЛЕНИЕ, С КОИТО УЧАСТВА В НАСТОЯЩИЯ КОНКУРС

• Хабилитационен труд – научни публикации (не по-малко от 10) в издания, които са реферирани и индексирани в световноизвестни бази данни с научна информация

1. Todorova S., N. Simeonova, K. Trendafilov, V.Valcheva, 2012, **Change of some chemical properties of alluvial-meadow soil (Mollic fluvisol) after long term fertilization**, Agricultural Science and Technology, vol. 4, № 3, pp. 285-287, ISSN: 1314-412X

ABSTRACT

In our research we are studying changes of some common chemical properties (pH, salt concentration, total carbonates, and humus content) during long-term organic-mineral fertilization and after its cessation. The object of our study is alluvial-meadow soil (Mollic fluvisol) in the region of Plovdiv (Bulgaria), on which in 1959 was set a trial with different variants of fertilization. Since 2006 the fertilization was stopped. Forty years of fertilization leads to increase in humus content, compared with unfertilized variant, and this is best expressed in variant with combined organic-mineral fertilization. After cessation of fertilization, soil organic matter content decrease in all variants. In other physicochemical parameters of the studied soil, there are no significant changes during the fertilization and after its cessation.

Key words: long-term fertilization, humus, pH, total carbonates, Mollic fluvisols

2. Todorova S., N. Simeonova, K. Trendafilov, V.Valcheva, 2012, **Change of available forms of nitrogen and phosphorus in alluvial-meadow soil, after long-term fertilization**, Agricultural Science and Technology, vol. 4, № 4, pp. 388-391, ISSN: 1314-412X

ABSTRACT

Our work is aimed at studying the natural potential of the soil to provide assimilated forms of nitrogen and phosphorus for plants, after cessation of 45-year mineral and organic-mineral fertilization. The object of our study is alluvial-meadow soil (Molok fluvisol) in the region of Plovdiv (Bulgaria), on which in 1961 was set a trial with different rates of fertilization in conditions of five-field crop rotation (maize - wheat - forage pea - barley - alfalfa). Since 2006 the fertilization was discontinued, but crop rotation is still maintained. As a result of the study we found that the natural reserves of mobile forms nitrogen and especially phosphorus in the soil are not sufficient for normal growth and development of plants, it is necessary to import organic and mineral fertilizers, but the rates must be based on these natural reserves of nutrients in soil. In this way excessive use of fertilizers can be avoided (especially nitrogen fertilizers), the negative environmental effect will be minimized and the cost of production will be somewhat reduced.

Key words: long-term fertilization, mineral nitrogen, available phosphorus, soil natural potential

3. **Valcheva V.,** K. Trendafilov, S. Todorova, 2012, **Influence of mineral fertilization on the harmful soil acidity and chemical composition of wine grape varieties**, Agricultural Science and Technology, vol. 4, № 3, pp.260-264., ISSN: 1314-412X

ABSTRACT

The influence of mineral fertilization with nitrogen, phosphorus and potassium on the indicators of harmful soil acidity and on the composition of plant biomass from vine varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot in fertility, planted on Chromic luvisol was evaluated. It was found that long-term balanced mineral fertilization has a pronounced effect on neutralization of the exchangeable H^+ . In relatively weak buffer capacity of soil sorption complex in unsaturated soils, buffering capacity associated with the transformation of phosphates and activity of K^+ from fertilizers causes a decrease in equilibrium concentrations of exchangeable hydrogen. The influence of balanced fertilization of vines with nitrogen, phosphorus and potassium on the composition of air-dried foliage and fresh grapes in commercial ripeness was also studied. Mineral fertilization with primary nutrients causes an increase in nitrogen content in both leaves and grapes in all studied varieties. It does not lead to changes in content of phosphorus in the foliage and grapes, while potassium content increases only in leaves.

Key words: fertilization, soil acidity, wine grape varieties

4. Trendafilov K., **V. Valcheva**, S. Todorova, 2013, **Influence of liming with $Ca(OH)_2$ on nitrogen, phosphorus and potassium content in foliage of vine varieties**, Agricultural Science and Technology, vol. 5, №1, pp.79-82, ISSN:1314-412X

ABSTRACT

In conditions of combined field experiment the influence of liming with $Ca(OH)_2$ was studied in rates of 1,0,2,5 and 5,0 t/ha on the input of nitrogen, phosphorus and potassium in the leaves of fertility vines from varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot, planted on Chromic luvisol. Samples were collected in three consecutive years; the first sampling time is 15 months after the incorporation of lime into the soil and the second and third - at intervals of 12 months. Nitrogen content in foliage established in all measurements from first sampling of leaves showed no significant differences between the variants. In subsequent years higher nitrogen content was found in the leaves of all varieties and the excess, compared to the first year is best expressed in the red varieties, mainly in Merlot variety. There are significant differences between varieties in relation to phosphorus content in air-dried leaves. There is a trend to increase the absorption of phosphorus when applying meliorative lime rates of 1,0 and 2,5 t/ha, while the rate of 5,0 t/ha inhibits the

accumulation of phosphorus in leaves. As regards the absorption of potassium similar patterns were found as for phosphorus. No significant difference between the content of potassium in the three consecutive years of sampling was found. Differences in absorption of potassium between the red and white wine varieties are more clearly pronounced than the differences between varieties in relation to content of phosphorus and nitrogen.

Key words: *liming, nitrogen, phosphorus, potassium, wine grape varieties*

5. Trendafilov K., **V. Valcheva**, S. Todorova, 2013, **Hidromeliorative solutions for irrigation and drainage of vineyard in north-western Bulgaria**, Scientific papers series A. Agronomy-University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. LVI, pp.133-139, [ISSN:2285-5785](#)

ABSTRACT

The present work is a project for water supply and partial drainage of vineyard covering an area of 17.13 ha, located in the village Rayanovtsi, municipality Belogradchik in northwest Bulgaria. The aim is to provide the water quantities needed to supply drip irrigation system of the vineyard. It was designed and constructed a system for partial subsoil pipe drainage for discharging of excess groundwater, causing waterlogging of part of the terrain. Collected drainage water is important as an additional source, providing certain autonomy in the water supplying of the object.

Performance of the tasks of this project is limited to applying a complex of technical-meliorative and hydromeliorative activities aiming to improve the drainage conditions in the non-drained part of the vineyard and to provide the necessary water amounts for the irrigation. In this paper are compared theoretical water balance calculations with the actual results from the first year of operation of the installation.

Key words: *drainage, irrigation, vineyard*

6. Trendafilov K., **V. Valcheva**, S. Todorova, 2013, **Differentiation of fertilization rates with phosphorus and potassium based on geospatial data for their reserves in soil**, Scientific papers series A. Agronomy-Agronomy- University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. LVI, pp.126-132, [ISSN:2285-5785](#)

ABSTRACT

Generally the stockpiling fertilization with phosphorus and potassium is applied before planting of perennial crops and requires introducing of high fertilization rates, calculated on the basis of the soil reserves and forecasted balance of the element for a long period. Opportunities for correction of stockpile fertilizer rates after planting of perennials are very limited, taking into account the technological limitations of incorporation of fertilizers to the depth of active root layer. This requires precise calculation of fertilizer rates, depending on the heterogeneity of the soil even before planting.

Present work is an attempt for approximation of balanced stockpiling rates with phosphorus and potassium to the actual needs of plants of fertilization on the whole area of the plantation. It is used nearest neighbour method, combined with soil sampling in graticule conformed to the configuration of the area. The optimal density of the graticule is established experimentally by prior reconnaissance soil sampling and defining the function of the spatial heterogeneity expressed as variogram. Obtained on the first approximation results are generalized to the threshold of economically significant sensitivity to corresponding nutrient, and then are outlined sub-areas for differentiated fertilization.

The advantages of the nearest neighbour method in the proposed model for geospatialization is that, its application provides an outlining of sub-areas for differentiated fertilization with proper configuration which is suitable for service by fertilizer technique.

Key words: *geospatialization, fertilization, phosphorus, potassium*

7. Ilieva R., E.Filcheva, I.Iliev, M.Todorava, R.Popova, **V. Valcheva**, M. Almaliev, K.Trendafilov, 2015, **Chemical and instrumental methods for determination of the organic matter component of the soils**,(*Химични и инструментални методи за определяне на органичната съставна част на почвите*), Scientific work-Agriculture University-Plovdiv, Vol. LIX, book 5, pp.331-337, ISSN: 1312-6318

ABSTRACT

The aim of the investigation is to present the possibility to study the humus system by applying chemical, optical and spectral methods. To get a precise and detailed information about the content, composition, properties and distribution of organic matter along the profile depth, the main soils of Bulgaria are studied by means of chemical, spectral (visible and infrared spectroscopy), and micromorphological methods. The obtained data extend and enrich the information about the organic matter as an important diagnostic feature of the soil properties and processes, the evaluation of their intensity and the position of the processes in the soil profile. Depending on the purposes, the scientist could prefer either one or a combination of methods. Results for Bulgarian soils on the basis of the above mentioned methods are used in soil classification, soil evaluation, etc., which is valuable information for farmers.

Key words: *chemical, method, optical, organic matter, spectral*

8. **Valcheva V.**, M. Almaliev, K. Trendafilov, 2015, **Research on the suitability of erosion terrains for the creation of orchards** (Проучване на пригодността на ерозионни терени за създаване на овощни насаждения), Scientific works-Agricultural University-Plovdiv, Vol. LIX, book 5, pp. 359-368, ISSN:1312-6318

ABSTRACT

The aim of the study was to make soil-climatic characteristics of the terrains located in the area of Elena, belonging to the European-continental climatic region and to assess their suitability for the creation of orchards. The structure of the harmful acidity and the degree of soil saturation with bases were determined based on the obtained results from the study, as well as a plan was proposed for the melioration of the areas and recommended fertilization rates reported. The terrain is erosively dangerous, which requires implementation of an appropriate system for tree-planting to reduce the intensity of the erosion process. The content of organic matter in the studied objects cannot meet the requirements of the crops. The established values of the pH indicator in the studied plots presented a significant limitation for the growth of the morello cherries and plums.

Key words: *soil, orchards, erosion, melioration*

9. Almaliev M., K.Trendafilov, **V. Valcheva**, N. Yordanova, N. Minev, 2016, **Potential of the land in Archar village for creation vines for quality wine grape varieties. Soil speciality of the terroir**, Scientific papers. Series A. Agronomy-University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. 59, pp.21-26, ISSN:2285-5785, ISSN:CD-ROM 2285-5793

ABSTRACT

The aim of this study was to make the soil characteristics of the land in Archar village and to assess their suitability for creation of new vineyards for growth of high-quality wine grape varieties. Successively were studied the characteristics of the terroir - soil texture and physical properties of the soil, determined was the soil reaction, the content of active calcium, humus, water-soluble salts and the content of nutrient macro elements. Based on the preliminary study results was determined harmful acidity and saturation degree of the soil with bases and has proposed a plan for amelioration of the problem areas and recommended fertilization rates. The presented work was an attempt to systematize of the

complex study on the suitability of one complicated terrain in terms of its topography and erosion conditions with regard to its suitability for transformation into vine terroir.

Key words: soil, vines, terroir, wine grape varieties

10. Valcheva V., N. Yordanova, K.Trendafilov, 2019, **Research of terrains in Karnobat plain and assessment of their suitability for perennial plantation growth**, Scientific papers.Series A-Agronomy- University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, Issue 2, vol. 63, pp.73-76, ISSN: 2285-5785, eISSN:2285-5807

ABSTRACT

The study was carried out on terrains located in Ginot and Vodenichane villages, on a total area of 152.2 hectares. As a result of the study in the investigated terrains, were established the following soil differences - Pelic vertisols, Peligleyic vertisols, Chromi-eutric cambisols, Eutric regosols, Rankers. The lands of Ginot village occupies a total area of 39 hectares in the high western part and 10 hectares in the lower eastern part, which borders the river Tarnavska. In the western part the terrain was well drained, including the areas of the relatively shallow gully in a direction from the northeast to the southwest. The following massifs were studied on the land of the village of Vodenichane: M 160 occupied a high and generally drained terrain, where the deep and well developed soils occupy about 24% and the rest occupied with shallow and stony soils; M 100 is a complex landscape which can be divided into drained and not drained parts. The slightly drained and not drained part of the terrain occupied an area of 9 hectares in the eastern part of the site; M 210 – the whole area was a low not drained or slightly drained area. The groundwater level was high.

Key words: soils, erosion, fertilization, amelioration

• Статии и доклади, публикувани в научни издания, реферирани и индексирани в световноизвестни бази данни с научна информация

1. Trendafilov K., **V. Valcheva**, 2008, **Content and amount of active Ca in Calcaeric and non-Calcaeric saturated cinnamonic forest soils in Eastern Rhodope soil province** (*Съдържание и разпределение на активния калций в карбонатни и безкарбонатни Канелени горски почви от Източнородопския почвен район*), Agricultural University-Plovdiv, Scientific Works, vol. LII, pp. 77-82, ISSN:1312-6318

ABSTRACT

Variations in contents of total CaCO₃ and active Ca organic matter, pH and granulometric content as from soil erosion, have been determined for the complex of cinnamonic forest soils within the soil area of Eastern Rhodope Mountains in Bulgaria. Results have been compared from examination of contents and property of soils with deep soil profile which have been disintegrated from erosion.

2. **Valcheva V.**, K. Trendafilov, 2012, **Response of vine rootstocks to the content of Ca and Mg in nutrient solution**, Agricultural Science and Technology, vol. 4, № 4, pp. 392-397, ISSN: 1314-412X

ABSTRACT

In conditions of combined field experiment the influence of liming with Ca(OH)₂ in rates of 1,0,2,5 and 5,0t/ha on the input of nitrogen, phosphorus and potassium in the leaves of fertility vines from varieties Sauvignon Blanc, Chardonnay Cabemet Sauvignon and Merlot,

planted on Chromic luvisol was studied. Samples were collected in three consecutive years; the first sampling time is 15 months after the incorporation of lime into the soil and the second and third - at intervals of 12 months. The highest content of iron is absorbed by the Cabemet Sauvignon - the average for all variants for this variety exceeds by nearly 50% the iron adsorbed by Sauvignon Blanc and by 40% - by Meriot variety. The relationship between iron absorption and rate of applied lime appears relatively clear at high lime rates-2,5 and 5,0 t/ha. For Meriot variety the opposite trend is found- liming increased iron content in foliage, and this tendency is stable and keeps over the entire period of our study. Relatively great extent of decrease in the amount of assimilated iron was found at rate of 2,5 t/ha hydrated lime. The manganese is absorbed more intensely in the leaves of white wine varieties, and especially in those of Sauvignon Blanc. The lowest manganese content is found in leaves of Meriot variety. Liming of soil in terms of this field experiment causes a statistically proven increase in the manganese content foliage of wine grape varieties, included in this study

Key words: *liming, iron, manganese, foliage, wine grape varieties*

3. Trendafilov K., V. Valcheva, 2012, Influence of liming with Ca(OH)_2 on the iron and manganese content in foliage of vine varieties, Agricultural Science and Technology, vol. 4, № 4, pp. 398-401, ISSN: 1314-412X

ABSTRACT

In conditions of combined field experiment the influence of liming with Ca(OH)_2 in rates of 1,0,2,5 and 5,0t/ha on the input of nitrogen, phosphorus potassium in the leaves of fertility vines from varieties Sauvignon Blanc, Chardonnay Cabemet Sauvignon and Meriot, planted on Chromic luvisol was studied. Samples were collected in three consecutive years; the first sampling time is 15 months after the incorporation of lime into the soil and the second and third - at intervals of 12 months. The highest content of iron is absorbed by the Cabemet Sauvignon - the average for all variants for this variety exceeds by nearly 50% the iron adsorbed by Sauvignon Blanc and by 40% - by Meriot variety. The relationship between iron absorption and rate of applied lime appears relatively clear at high lime rates-2,5 and 5,0 t/ha. For Meriot variety the opposite trend is found- liming increased iron content in foliage, and this tendency is stable and keeps over the entire period of our study. Relatively great extent of decrease in the amount of assimilated iron was found at rate of 2,5 t/ha hydrated lime. The manganese is absorbed more intensely in the leaves of white wine varieties, and especially in those of Sauvignon Blanc. The lowest manganese content is found in leaves of Meriot variety. Liming of soil in terms of this field experiment causes a statistically proven increase in the manganese content foliage of wine grape varieties, included in this study

Key words: *liming, iron, manganese, foliage, wine grape varieties*

4. Valcheva V., S. Todorova, K. Trendafilov, 2013, Comparison of systems for taxonomy and classification of soils for description of some degradation processes occurring in them, Scientific papers series A. Agronomy -University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. LVI, pp.152-159, ISSN:2285-5785

ABSTRACT

The aim of this work is based on data from large-scale soil survey, and on our own research to try to systematize and evaluate the main and economically significant factors for degradation of the complex of Cinnamon forest soils (Chromic luvisols) located near the town of Svilengrad, southeast Bulgaria. On the basis of data from large-scale soil survey, which is mainly based on genetic method for soil taxonomy is made generalization of soil map data, as are kept the requirements for conformity of soil types according to classification of FAO and the International soil database. Separate soil units are evaluated about: the degree of development of soil erosion, particle size distribution, degree of humification and soil acidity to a level harmful for the main agricultural crops. In the

discussed in this study, complex of Cinnamon forest soils, was found that the differentiation of soil types on the basis of an improved system for taxonomy and classification, used in the FAO classification, better reflects the extent and direction of the degradation process. This is achieved without explicit mention of any of the degradation processes in the name of the soil units.

Key words: *Chromic luvisols, classification, degradation, taxonomy*

5. Valcheva V., S. Todorova, 2013, Model for investigation, ameliorant and organization of terrains with complex topology for planting of vineyards, Scientific papers series A. Agronomy-University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. LVI, pp.160-166, ISSN:2285-5785

ABSTRACT

On the basis of areas with complex topography and soil diversity is proposed a stepwise model for reclamation of lands for planting of vineyards. The model includes climate, soil and hydromeliorative conditions. Limiting components are presented as being localized in different parts of the area limitations of the suitability. The strength of the constraints is evaluated depending on the area of their occurrence, the extent to which they limit the suitability of the terrain and the opportunities for ameliorative correction. Soil sampling and mapping of soil is performed by applying of GIS for characterization of the spatial diversity. Obtained results are analysed based on the expectations for constraints and non-differentiability of the function characterizing the properties of the soil at each point within the field. Through this approach is considered the minimum number of points required for investigation and are localized the areas for correction of limitations arising from the properties of the soil and terrain.

Key words: *GIS, soil properties, spatial diversity, vineyards*

6. Trendafilov K., V. Valcheva, 2013, Spatial variation of physical clay and organic carbon in the complex of cinnamon forest soils (Chromic luvisols) and their suitability for cultivation of vines, Scientific papers series A. Agronomy-University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. LVI, pp.140-146, ISSN:2285-5785

ABSTRACT

Object of this study are lands in the village Balabanchevo, municipality Sungurlare, Bulgaria. The main soil type in the region is Chromic luvisols with soil profile differentiated to different degree. In the current work is studied the spatial variation of soil organic matter and physical clay content, depending on the topographical location and the degree of erosion.

Studied soils are characterized by two main processes that determine the their particle size distribution - lessivage, causing accumulation of clay in subsoil and surface erosion, which is responsible for removal of relatively sandy upper layers and remaining of clayey subsurface horizons on the top. In this research is determined particle size distribution in three depths - 0-25, 25-50 and 50-75 cm and the content organic carbon in the surface horizons.

Differences in clay content determined in the three studied depths are substantial and statistically significant.

Differences between sampling points in respect to organic matter content are insignificant. Relatively high levels of humus content is detected only in a small part of investigated area, where are distributed relatively dark colored soils with expressed meadow soil formation process, and in the northern and the southern parts, where to some extent more strongly is retained humus formation effect of the natural vegetation.

Key words: *Chromic luvisols, geospatialization, organic carbon, physical clay*

7. Trendafilov K., V. Valcheva, 2015, **Soil acidity-specific quality or ameliorative disadvantage of the vineyard terrior** (*Киселинността на почвите-специфично качество или мелиоративен недостатък на лозарския тероар*), Scientific works-Agricultural University-Plovdiv, Vol. LIX, book 5, pp. 321-330, [ISSN:1312-6318](#)

ABSTRACT

This study systematizes results of many years research on acid-alkaline balance of the complex of non-carbonate soils in Bulgaria, in terms of their suitability to form the soil component of the vineyard terrior. The conception of the terrior in the wine viticulture increasingly released by descriptive and analytical characteristics of the areas, which are traditionally accepted as wine terriors and directed to forecasting models, interpreting the potential of a particular region or a concrete terrain for its transformation into terrior. From this viewpoint, the importance of acid-alkaline balance, determined by the structure of the soil acidity is a complex component of the terrior. In terms of their relative importance it is comparable to the importance of the chemical composition of the soil as determine the dynamics of its components in the soil-plant system.

Key words: *acid-alkaline balance, vineyard terrior, soils*

8. Valcheva V., 2015, **Soil-climatic assessment of the suitability of the lands for the growth of strawberries, raspberries and blackberries in the area of the town of Gotse Delchev** (*Почвено-климатична оценка на пригодността на земите за отглеждане на ягоди, малини и къпини в района на град Гоце Делчев*), Scientific works-Agricultural University-Plovdiv, Vol. LIX, book 5, pp. 369-379, [ISSN:1312-6318](#)

ABSTRACT

The climate and soil conditions in the area of the town of Gotse Delchev generally are suitable for the growth of strawberries, raspberries and blackberries. The following factors are relatively unfavourable: a relatively low probability for the establishment of extremely low winter temperatures in the absence of a snow cover, high rainfall amounts during the ripening of the strawberries, probability for the establishment of a low relative humidity combined with low soil moisture during flowering and ripening, availability of high relative humidity periods, relatively high risk of hails, a potential risk of soil acidification and low content of nutrient macro elements and organic matter in the soil. To ensure the normal growth of the plants, relevant schemes and fertilization rates, shown in this study, are applied.

Key words: *soil, climate, berries, fertilization rates*

9. Valcheva V., K.Trendafilov, M.Almaliiev, 2015, **Nitrogen mineralization potential of alluvial-meadow soil after long-term fertilization**, Agricultural Science and Technology, Vol.7, No 4, pp 476-480, [ISSN:1314-412X](#)

ABSTRACT

The aim of this study was to investigate the nitrogen mineralization potential of alluvial meadow soil after continuous fertilization. Our research was focused on a long-term field experiment with different variants of fertilization set in 1959 in the Experimental field of Agricultural University-Plovdiv. Since 2006 the fertilization has been discontinued. In 2010 and 2011, we collected soil samples from depth 0 – 30cm and from the following variants: 1 – control, 2 –N₅₀ P₃₀ K₂₀ , 3 –N₂₅ P₁₅ K₀ + 6 t/da manure, 4 –N₅₀ P₀ K₂₀. In accordance with relatively high content of total nitrogen, the nitrogen mineralization potential of the soil is

high. The maximum amount of nitrogen, susceptible to mineralization at optimum temperature and humidity ranges from 233.21 to 350.90 mg N/kg soil. The proportion of potentially mineralizable nitrogen from the total nitrogen in soil is low – average 17%. The reason for this is the humic type of soil organic matter. Also in its composition dominated black humic acids, which are bonded with Ca and resistant to decomposition. Sufficient amount of clay particles and micropores provide physical protection of organic matter from microbial activity. The mean value of mineralization rate constant (k), 0.041, denotes that at optimal conditions the mineralizable N fraction is released at an average rate of 4,1% per week, based on the quantity of mineralizable N remaining after each succeeding week of incubation.

Key words: soils, nitrogen, mineralization rate constant

10. Trendafilov K., M.Almaliev, **V. Valcheva**, 2016, **Potential of the land in Archar village for creation vines for high-quality wine grape varieties. Climatic and geographic speciality of the terroir**, Scientific papers. Series A. Agronomy-University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, vol. 59, pp.159-164, ISSN:2285-5785, ISSN:CD-ROM 2285-5793

ABSTRACT

The most important factors, defining the concept of "terroir" for a great wine are soil and climate. The climate allows the vine to adapt to the given location and under specific conditions. In this sense, interest in our study was part of land in Archar village in North terroir "Danubian Plain", characterized by its specific climate. The influence of the light over the vine plant estimate by the values of the helios-thermos coefficient. The average value for the base station was 4.22 and in terms of the brightness determined the studied object as suitable for the cultivation of all vine varieties. The radiation conditions in the studied area were suitable for growth of vine and did not impose restrictions on the choice of formations, planting distance and orientation of the rows of the plantation. The data for the average monthly air temperature for the warmest month of the year shown, that the area was suitable for the production of vine intended for relatively large set of guidelines for realization - for champagne wine, white and red quality wines, white and red table wine, dessert wines, as well as for the production of dessert grapes. During the period of grapes ripening - August and September were found relatively high values of the average temperature amplitudes. The stated values ensure optimal conditions for the process of photosynthesis and respiration and provide a normal and harmonious accumulation of sugars and acids in the grapes. The vegetation period was 200 days. The stated value was sufficient and provides a normal vegetation period for most varieties.

Key words: vine, terroir, wine, grape

11. Trendafilov K., **V. Valcheva**, M.Almaliev, 2019, **Ameliorative, technical and operational solution of vineyard in the conditions of a various soil cover and complex relief**, Scientific papers Series A-Agronomy- University of Agronomic Science and Veterinary Medicine of Bucharest Faculty of Agriculture, Issue 1, vol. 62, pp. 205-212, ISSN: 2285-5785, eISSN:2285-5807

ABSTRACT

The aim of the study was to propose a method for systematization of a results of exploration of the relief, hydrology and soil cover for the development of a land-cultivating and ameliorative solution of vineyard terroir under conditions of complex erosion-accumulation landscape. A grouping of the relief and hydrology was carried out. The soil cover was investigated by the large-scale mapping method. The established soil differences were mapped and their distribution was compared with the data for the relief and the runoff. As a result, on the terrain were detached sections with different degrees of suitability for

vineyards growth. In the terrains with limited suitability were detached zones, requiring a ameliorative effect on one or more of the three components of the landscape-relief, hydrology and soil.

Key words: *terroir, vineyards, water runoff, landscape, erosion*

• Статии в нереферирани списания с научно рецензиране или в редактирани колективни томове

1. **Valcheva V.**, V. Spasov, 2010, **The efficiency of Kosmic herbicide for weed control in vineyards** (*Ефективност на хербицида Космик за борба с плевелите при лозята*, Agricultural University-Plovdiv, Scientific Works, vol.LV, book 3, pp. 55-59, ISSN:1312-6318)

ABSTRACT

The experiment was carried out in 2005 and 2006 in the vineyards of the village of Brestovitza in the region of Plovdiv. Five variants were investigated-1) Control-untreated, twice mechanically hoed in the row and between the rows, 2) Kosmic (8000 ml/ha), 3) Kosmic (12000 ml/ha). The aim of the present investigation is to study the efficiency of the herbicide Kosmic on the special type of weeds and the degree of weed spread, the influence of the production and on some indices-which characterize the grape quality (sugar content, titrabe and generally acidity, residues).

The results showed that both variants (8000 ml/ha and 12000 ml/ha) had a perfect effect against all types of annual weeds. The dose of (8000 ml/ha) was efficient only against *Cynodon dactylon* (L) Pers, *Androogon halepensis*-Brot. The dose of (12000 ml/ha) was efficient against all the species-annual and perennial.

Higher yields have been obtained from the variant, treated with Kosmic (12000ml/ha-9950-9100-9520 kg/ha; 22-23-22%). The herbicide does not influence negatively over the quality of grape of c.v. Bolgar.

Key words: *vineyards, weeds, herbicides, yield, quality*

2. **Valcheva V.**, K. Trendafilov, 2011, **The effect of storage fertilization with Ca(OH)₂ on the acid/basic soil balance and the chemical composition of the vine grape varieties** (*Влияние на варуването с хидратна вар върху киселинно-алкалното равновесие в кореновата зона на винени сортове лозя*), Proceedings International conference 100 yeards Bulgarian Soil Science, part 1, pp. 474-479, ISBN: 978-954-749-088-8

ABSTRACT

The efficiency in neutralizing the acidity of soils under perennial crops is affected by the problematic access of the liming materials and their difficult movement to the root active zone. To overcome these the application of hydrated lime – the ready-made soluble [Ca(OH)₂] with high neutralizing capacity was tested.

The experiment was set up as a field trial on Chromic luviosol under 2 - 3 years old vineyards. Ameliorants were supplied after the end of vegetation and ploughed under 20 cm soil. The applied rates were 1000, 2500 and 5000 kg/ha.

Fifteen months after the application of lime a significant effect was found on pH_(KCl) and on the amount of available Al³⁺ in the 25 cm soil layer. The second sampling revealed that the effect of the ameliorant could be identified at 50 cm, however the lower rates (1000 and 2500 kg CaO) had the tendency of being buffered, which lead to recovering of the initial acidic/basic balance in the soil.

Key words: *Soil acidity; Field experiment, Vineyards*

3. Трендафилов К., **В. Вълчева**, Р. Попова, С. Тодорова, М. Алмалиев, 2015, **Динамика на придвижване на микронизирания варовик, използван като химичен мелиорант за неутрализиране на вредната киселинност по профила на делувиялни почви**, Международна конференция, Почвата и агротехнологиите в променящия се свят, Институт по почвознание, агротехнологии и защита на растенията „Никола Пушкиров“ 11-15 Май, София, с. 250- 256, ISBN: 978-619-90560-0-4, електронен сборник

ABSTRACT

In the terms of production experiment was studied the influence of micronized limestone applied in rates 3,0, 4,0 and 7,5 t/ha on the forms, the content and the distribution of calcium in the profile of Eutric fluvisols. Samples were collected in two consecutive years. The studied meliorant had fast effect on harmful soil acidity, which occurs entirely even in the first year of meliorative period of a depth to 40 cm. When applied roughly partial meliorants the period for neutralization of the soil acidity in the subsoil horizons were three years.

The micronized limestone is slightly hygroscopic, mealy and is applicable for mixing both centrifugal and band transport sprinklers.

Key words: *micronized limestone, acidity, calcium, Eutric fluvisols*

4. **Вълчева В.**, К. Трендафилов, С. Тодорова, М. Алмалиев, 2015, **Влияние на варуването с различни форми на калция върху съдържанието на калций и магнезий в листата на винени сортове лози**, Международна конференция, Почвата и агротехнологиите в променящия се свят, Институт по почвознание, агротехнологии и защита на растенията „Никола Пушкиров“ 11-15 Май, София, с.257-263, ISBN: 978-619-90560-0-4, електронен сборник

ABSTRACT

In the terms of combined field experiment was studied the influence of liming with at rates of 1,0, 2,5 and 5,0 t/ha on the input of calcium and magnesium in the foliage of fertility vines from varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot planted on Chromic luvisol. Samples were collected in two consecutive years.

The liming causes intense absorption of calcium and magnesium in the foliage of the vines. During the first year after the applying of the chemical meliorants the increase of the extent, in which absorb Ca in the foliage was proportional to the amount of the applied meliorant, while in subsequent years the data varied, as preserved the overall excess of absorbed by foliage calcium of the variants with liming compared to the variants without liming.

The applying of calcium containing meliorants in the soil causes increased absorption of magnesium in the foliage of the vines, although, this element was not applied as meliorant.

Key words: *liming, calcium, magnesium, foliage, wine grape varieties*

5. Trendafilov K., **V. Valcheva**, M. Almaliev, N. Yordanova, M. Minev, S. Todorova, 2015, **Adjustment of low productive terrains for establishment of vineyard terroir in Bulgaria**, International Journal of Research in Agriculture and Forestry, vol.2, Issue 4, pp.40-49, ISSN 2394-5907

ABSTRACT

The aim of this study was to propose principles technological decisions for adjustment of low productive terrains located in Chernogorovo village and their conversion into specific terroir for growth of wine varieties vineyards. Successively were studied the morphological

characteristics of the terrain - mechanical composition and physical properties of the soil, determines were soil reaction, the content of total and alkaline earth carbonates, the content of active calcium, humus content, water-soluble salts, the content of easily absorbable iron, index of chlorine force and the content of nutrient macro elements. Based on the results was found, that within the studied terrain in the part occupied by Chromi-eutric cambisols and Eutric regosols, the terrain was suitable for the establishment and cultivation of vineyards in the direction of high quality red wines. The content of total carbonates and active calcium in Chromi-eutric cambisols did not limit the choice of pad. Can be used seedlings, grafted of pad Berlandieri x Riparia selection Openhaim 4 (SO 4) or other suitable. The area, occupied by Eutric regosols, had higher content of total and active carbonates and it is recommended the use of sustainable pad - Chasla x Berlandieri 41B. The presented study was an attempt to systematize the complex research on the suitability of one complicated terrain in terms of erosive conditions with regard to its suitability for transformation into vineyard terroir.

Keywords: soil properties, vineyard, terroir, wine varieties

6. Valcheva V., K. Trendafilov, M. Almaliev, 2016, Research of the dynamics of desorption and saturation of the sorption positions with calcium and magnesium in terms of dish experiment, (Изследване динамиката на десорбцията и насищане на сорбционните позиции с калций и магнезий в условията на съдов опит), Ecology and Health House of Science and technique - Plovdiv, pp. 137-140, ISSN: 2367-9530

ABSTRACT

The aim of this study was to research consistently, the dynamics of desorption and saturation of sorption positions with calcium and magnesium in terms of dish experiment with genetically acidic soil, based on the results to determine the rates of liming, to achieve a excess of Ca^{2+} in the soil in the form of CaCO_3 . The average lime rate was 3,7 t/ha. The results shown, that all rates reduce the content of easily mobile exchangeable Al and H, respectively to increase the content of bases in the soil and to neutralize soil acidity, expressed by integrating indicator V_3 . The exceeding of the lime rate was reason for fully neutralization of the acidic exchangeable positions. Its implementation increases calcium reserve, stabilize acid-alkaline balance in the soil and possibly suppresses the exchange of micro elements - metals between the soil and root sorption positions.

Key words: calcium, magnesium, soil

7. Trendafilov K., V. Valcheva, M. Almaliev, 2016, Effect of liming on the indicators characterizing the acid-alkane balance in the complex of genetically acid soil (Влияние на варуването върху показателите характеризиращи киселинно-алкалното равновесие в комплекса от генетично кисели почви), Ecology and Health House of Science and technique -Plovdiv, pp. 121-127, ISSN: 2367-9530

ABSTRACT

The aim of this study was to determine the effects of soluble calcium containing meliorants (micronized limestone) on soil acidity in different crops (wheat, potatoes, Kazanlak roses, lavender and fruitbearing vines). The aim is determined in terms of production field experiment within two years, by developing variants with different rates of lime for different crops grown on genetically acidic soils. The variation of the indicators of harmful acidity in the soil was found in all fields regardless of the crops, grown on them. In all fields of study was found an increase in the pH value, measured in water and potassium chloride, as well as the content of easily mobile Al^{3+} , H^+ , Mn^{2+} , Ca^{2+} and Mg^{2+} . As a result of liming, pH (H_2O) increased on average for all depths and soil from 5.21 to 5.83, as the total difference between the values of the indicator was statistically significant at the standard level of

probability 95%. Liming of deluvial soils increased the concentration of easily mobile exchangeable bases. An average increase of Ca^{2+} for all studied horizons increased in the content of easily mobile exchangeable Ca nearly 1 meq, which, given the low sorption activity represents about 25% of the content of this element in easily mobile exchangeable form.

Key words: *liming, wine grape varieties, iron, manganese*

8. Trendafilov K., V. Valcheva, M. Almaliev, 2017, Principally meliorative method for complex anti-erosion protection of a terrain with perennial crops, 7th International symposium on environmental and material flow management-EMFM, Bor-Serbia, Book of proceedings, pp.135-147, ISBN:978-86-6305-071-6

ABSTRACT

The aim of the project was to suggest a method for complex anti-erosion protection of a terrain, where on the natural grassy vegetation was planted vineyard. The cultivation of vineyards on the terrain was successful in the technological aspect, but several years exploitation of the plants caused an active erosion process. The study was based on an analysis of the soil, climatic and topographical conditions of the terrain in Chelnik village, Bulgaria and aims to offer a complex system for anti-erosion protection of the terrain. The soil within the boundaries of the terrain is Pellic Vertisols.

Key words: *erosion, Pellic Vertisols, terrain, vineyard*

9. Valcheva V., 2020, Influence of the liming on the soil and morphological indicators of lavender grown in organic agriculture (Влияние на варуването върху почвените и морфологичните показатели на лавандула отглеждана в условия на биологично земеделие), KNOWLEDGE International Journal Scientific papers, Vol. 41, No.4, pp. 759-770, ISSN:2545-4439

ABSTRACT

The influence of liming on the content and distribution of calcium along the depth of the profile and on the growth, development and morphological changes in lavender grown in organic production was observed in the conditions of field experiment on the complex of genetically acid soils. Soil samples were collected in three consecutive years and plant samples in two. The ameliorative effect of the liming during the three years continues, although with a slower rate of neutralization of the acid positions. The applied rates of 3 and 4 t/ha, summarized for all depths showed that a stable effect in regard to acid-alkaline balance was achieved at 4 t/ha ameliorant. The applied calcium-containing ameliorants into the soil did not lead to a sharp change in the content of this element in the plant biomass. Liming had a positive effect on the leaf mass, the number of inflorescences and the overall habit of the plants.

Key words: *acidity, calcium, lavender, liming, magnesium*

10. Valcheva V., 2020, Tracking the changes in the degree of saturation of the constant sorption positions in the soil with easily mobile exchangeable bases (Проследяване измененията на степента на наситеност на постоянните сорбционни позиции в почвата с лесноподвижни обменни бази), KNOWLEDGE International Journal Scientific papers, Vol. 41, No.4, pp. 795-800, ISSN:2545-4439

ABSTRACT

The results of the analyzes for determination of the harmful acidity and need for liming of the soil showed that in the terrains presented for research there was an acid reaction, relatively high content of easily mobile exchangeable Al^{3+} , H^{+} , and highly varying in area and depths content of easily mobile exchangeable Ca^{2+} and Mg^{2+} . There was a necessary

to develop a model through which the liming of soils containing harmful acidity and characterized by a strong deficiency of bases elements in the composition of its sorption complex to be partially or completely replaced by mineral fertilization with neutralizing fertilizers to achieve a sufficient degree of ameliorative impact in order to stabilize the acid-alkaline balance of soil buffer systems. The model makes sense for crops in which Ca and Mg deficiency causes not only an acid toxic effect, but also has a significant adverse effect on the quality of primary and final production.

Key words: *acid- alkaline balance, degree of soil saturation with bases, micronized limestone*